

March 21, 2003

Mr. Alfred J. Cayia
Site Vice President
Point Beach Nuclear Plant
Nuclear Management Company, LLC
6610 Nuclear Road
Two Rivers, WI 54241

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2 - EVALUATION OF RELIEF REQUEST NO. 11 ASSOCIATED WITH EMERGENCY DIESEL SYSTEM VT-2 EXAMINATIONS FOR THE FOURTH 10-YEAR INTERVAL (TAC NOS. MB5399 AND MB5400)

Dear Mr. Cayia:

By letter dated March 22, 2002, as supplemented by letter dated March 10, 2003, the Nuclear Management Company, LLC (the licensee), submitted Relief Request No. 11 requesting relief from the requirements of the American Society of Mechanical Engineers *Boiler and Pressure Vessel Code*, Section XI, to perform VT-2 visual examinations and system leakage and hydrostatic testing on Class 3 standby emergency diesel generator subsystems.

The Nuclear Regulatory Commission (NRC) staff has determined that the proposed request for relief is authorized by law pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that the proposed alternative provides a acceptable level of quality and safety. The duration for the authorized alternative is for the fourth 10-year inservice inspection interval.

The NRC staff's safety evaluation is enclosed.

Sincerely,

/RA/

L. Raghavan, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-266 and 50-301

Enclosure: Safety Evaluation

cc w/encl: See next page

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*Concurred via e-mail
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DATE	03/19/2003	03/19/2003	03/07/2003	03/18/2003	03/21/2003

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Point Beach Nuclear Plant, Units 1 and 2

cc:

Mr. John H. O'Neill, Jr.
Shaw, Pittman, Potts & Trowbridge
2300 N Street, NW
Washington, DC 20037-1128

Mr. Richard R. Grigg
President and Chief Operating Officer
Wisconsin Electric Power Company
231 West Michigan Street
Milwaukee, WI 53201

Site Licensing Manager
Point Beach Nuclear Plant
Nuclear Management Company, LLC
6610 Nuclear Road
Two Rivers, WI 54241

Mr. Ken Duveneck
Town Chairman
Town of Two Creeks
13017 State Highway 42
Mishicot, WI 54228

Chairman
Public Service Commission
of Wisconsin
P.O. Box 7854
Madison, WI 53707-7854

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4351

Resident Inspector's Office
U.S. Nuclear Regulatory Commission
6612 Nuclear Road
Two Rivers, WI 54241

Ms. Sarah Jenkins
Electric Division
Public Service Commission of Wisconsin
P.O. Box 7854
Madison, WI 53707-7854

Mr. Roy A. Anderson
Executive Vice President and
Chief Nuclear Officer
Nuclear Management Company, LLC
700 First Street
Hudson, WI 54016

Nuclear Asset Manager
Wisconsin Electric Power Company
231 West Michigan Street
Milwaukee, WI 53201

October 2002

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF NO. 11 FOR THE FOURTH 10-YEAR INTERVAL AT

NUCLEAR MANAGEMENT COMPANY, LLC

POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-266 AND 50-301

1.0 INTRODUCTION

By letter dated March 22, 2002, as supplemented by letter dated March 10, 2003, the Nuclear Management Company, LLC (the licensee), submitted a request for relief pursuant to 10 CFR 50.55a(a)(3)(i) for the Point Beach Nuclear Plant (PBNP), Units 1 and 2. The licensee sought relief from the requirements of American Society of Mechanical Engineers *Boiler and Pressure Vessel Code* (ASME Code), Section XI, to perform VT-2 visual examinations and system leakage and hydrostatic testing on Class 3 standby emergency diesel generator (EDG) subsystems. The proposed relief is sought for the fourth 10-year inservice inspection (ISI) interval. The PBNP fourth 10-year ISI program plan meets the requirements of ASME Code, Section XI, 1998 edition with addenda through 2000.

2.0 REGULATORY EVALUATION

The regulation at 10 CFR 50.55a(g) specifies that ISI of nuclear power plant components shall be performed in accordance with the requirements of the ASME Code, Section XI, except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). The regulation at 10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the Nuclear Regulatory Commission (NRC), if (i) the proposed alternatives would provide an acceptable level of quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The licensee submitted Relief Request No. 11 for the fourth 10-year ISI interval. The Code of record for the fourth interval for the PBNP Units 1 and 2 is the ASME Code, Section XI, 1998 edition with addenda through 2000. The information provided by the licensee in support of the request has been evaluated and the basis for the NRC staff's disposition is documented below.

ENCLOSURE

3.0 TECHNICAL EVALUATION

3.1 System Identification (as stated by the licensee):

Class 3 Standby Emergency Diesel Generator Subsystems

Applicable drawings:

M-209 CBD Sh.12, Emergency Diesel Air Starting System (G01 & G02)
M-209 CBD Sh.14, Starting and Service Air System Diesel Generator Building (G03)
M-209 CBD Sh.15, Starting Air System Diesel Generator Building (G04)
M-219 CBD Sh. 1, Fuel Oil System (G01 & G02)
M-219 CBD Sh. 2, Fuel Oil System (G01 & G02)
M-219 CBD Sh. 3, Fuel Oil System (G03 & G04)
M-227 CBD Sh. 1, Glycol Cooling System Diesel Generator Building (G03)
M-227 CBD Sh. 1, Glycol Cooling System Diesel Generator Building (G04)

3.2 Code Examination Requirements (as stated by the licensee):

Examination Category D-B, Item D 2.10 - System leakage test of Class 3 pressure retaining components once each period.

Examination Category D-B, Item D 2.20 - System hydrostatic test of Class 3 pressure retaining components once each interval.

3.3 Licensee's Relief Requested (as stated):

Relief is requested from performing the system leakage and hydrostatic testing on the Class 3 Standby Emergency Diesel Generator Subsystems.

3.4 Licensee's Basis for Requesting Relief (as stated):

The primary intent of Technical Specification surveillance testing is slightly different from Code required examinations. Technical Specifications are intended to demonstrate component operability, whereas the system leakage and hydrostatic tests are intended to demonstrate pressure boundary integrity. There are no VT-3 visual examinations imposed on the Emergency Diesel Generator (EDG) subsystems due to pressure/temperature or size exemptions as allowed IWD-1220. Therefore, verification of pressure boundary structural integrity on EDG subsystems is not included in the PBNP ISI Program. Successful EDG operability testing requires the associated subsystems to maintain pressure boundary integrity and therefore, provides an equivalent level of quality and safety to that of ASME Section XI inspections. Those auxiliary support subsystems addressed within the scope of this request for relief include the starting air system, fuel oil system, and glycol cooling system (G03 and G04 only for glycol cooling).

The repeatability of auxiliary subsystem instrumentation (pressure, level, and temperature) recorded during surveillance testing provides supporting data for the indirect verification of component integrity. Operations personnel are specifically trained in the testing of the standby EDGs and are aware of the necessity to maintain pressure boundary of the auxiliary

subsystems. They are also aware of the necessity to maintain unobstructed flow characteristics for components discharging to a tank vented to atmosphere as do the diesel fuel oil transfer pumps. Although not a specific step in the surveillance procedure, verification of component pressure boundary integrity is administratively required of personnel performing standby EDG operability testing. If evidence of leakage is identified during the test, a Condition Report and/or work order is initiated with corrective actions or repairs implemented and follow-up confirmatory testing is performed.

The following paragraphs provide specific procedural actions which support the use of alternative operability testing in lieu of ASME Section XI system pressure testing and VT-2 visual examination.

Starting Air Auxiliary Subsystem

PBNP surveillance test procedures TS-81, 82, 83 and 84 are performed monthly to demonstrate EDG operability. As part of these procedures, pressures of both right and left bank air receivers are recorded prior to and subsequent to starting the engine with the drop in pressure verified to occur at the air start motor outlet ports. The satisfactory completion of this test demonstrates the skid-mounted air start components are properly performing their function and provides positive indication the pressure boundary integrity of the starting air subsystem is intact. In addition to the monthly testing, Inservice Test Procedure IT-100 performs quarterly reverse exercising of the right/left bank air start receivers' inlet check valves. During the performance of this procedure, each air compressor is isolated with a vent path provided upstream of the air receiver supply check valves. Receiver pressure is observed for 15 minutes with stringent leakage criteria applied. If a through wall or otherwise excessive leak were to occur in the pressure boundary, seat leakage acceptance criteria for the check valves would be exceeded, resulting in a requirement to determine the source of the leak and repair/replacement. This data also provides a positive indication that pressure boundary integrity is being maintained for the starting air subsystem. Based on the monthly and quarterly test frequencies and the data collected during these alternative tests, PBNP considers that testing performed to satisfy the Technical Specification surveillance requirements provide an acceptable level of quality and safety as an alternative to ASME Section XI system pressure testing.

Fuel Oil Transfer Subsystem

For the fuel oil transfer subsystem, an acceptable ASME Section XI pressure test would consist of a VT-2 visual examination of the outlet piping from the day tank to the engine. This is done when the day tank is filled to design capacity and demonstrates the transfer pump's ability to provide adequate makeup flow to the day tank during system operation. [For the fuel oil transfer subsystem, an acceptable ASME Section XI pressure test would consist of a VT-2 visual examination of the outlet piping (that extends from the day tank to the engine). The VT-2 visual exam is performed when two conditions are met: (1) the day tank is filled to design capacity, and (2) it has been demonstrated that the transfer pump is providing adequate flow. This test is performed while the day tank is vented to atmosphere, which is its normal configuration.] This is due to the day tank being vented to atmosphere. During the monthly performance of TS-81, 82, 83 and 84, the inventory in the day tank is drained down to the low-level setpoint for pump actuation. The pump is verified to automatically start and allowed to replenish the day tank inventory to the high level setpoint with verification the pump

automatically stops. During this process, procedure steps require recording of the percentage of tank level when the transfer pump automatically starts, as well as the percentage of tank level upon cessation of pump operation. The pump flow rate is recorded during replenishment of day tank inventory for G03 and G04 with acceptance criteria applied to recorded flow rate values. Discharge flow rate for G01 and G02 transfer pumps is not measured during the monthly performance of TS-81 and TS-82 as there is no flow instrumentation in the pumps discharge lines to G01 and G02 day tanks. The flow rate to G01 and G02 day tanks is measured each Unit 1 refueling outage, utilizing an ultrasonic flow meter during inservice testing of unloader valves FO-3982A and FO-3983A. This data provides a positive indication that pressure boundary integrity is being maintained. Based on the Technical Specification surveillance testing frequency and the data collected during these alternative tests, PBNP considers the testing performed to satisfy the Technical Specification surveillance requirements provide an acceptable level of quality and safety as an alternative to ASME Section XI system pressure testing.

Glycol Cooling Subsystem (G03 and G04 Only)

Standby emergency diesel generators G03 and G04 are provided with a glycol cooling subsystem consisting of a coolant to air type heat exchanger. During the monthly performance of TS-83 and TS-84, coolant tank level as well as multiple point temperature indication is recorded prior to starting the engine, after 30 minutes of loaded run time, and prior to shut down, or hourly for extended runs. Normal values for all acquired data are provided in the procedure log-sheet as well as limits for the data recorded. This data provides a positive indication that pressure boundary integrity is being maintained. Based on the monthly frequency and data collected during these tests, PBNP considers the testing performed to satisfy the Technical Specification surveillance requirements provide an acceptable level of quality and safety as an alternative to ASME Section XI system pressure testing.

Technical Specification surveillance requires standby emergency diesel generators to be subject to an inspection in accordance with procedures prepared per the manufacturer's recommendation. These examinations provide added assurance the components within the starting air, fuel oil transfer, and glycol cooling subsystems demonstrate pressure boundary integrity and the ability to provide adequate flow for satisfactory Standby Emergency Diesel Generator operation.

Essentially this same relief was authorized for use in SER dated May 31, 2000. The Technical Specification surveillance requirements provide an acceptable level of quality and safety and is an acceptable alternative to ASME Section XI system leakage and hydrostatic testing.

3.5 Licensee's Proposed Alternative Examinations (as stated)

As an alternate to performing the required pressure testing on subsystems supporting the standby Emergency Diesel Generators, PBNP proposes utilizing Plant Technical Specifications surveillance testing as an acceptable alternative to that required by the Code.

3.6 NRC Staff Evaluation

The licensee sought relief from the requirements of ASME Code, Section XI, to perform VT-2 examinations on some Class 3 standby EDG subsystems. The licensee indicated that there

are no VT-3 visual examinations imposed on the EDG subsystems because of pressure/temperature or size exemptions included in paragraph IWD-1220 of Section XI and, therefore, verification of pressure boundary structural integrity on EDG subsystems is not included in the PBNP ISI Program. Specifically, the licensee requested relief for the starting air system, fuel oil system, and glycol cooling system (G03 and G04 only for glycol cooling). The licensee proposed an alternative to the Code requirements which included surveillance testing to demonstrate component operability, as required by the plant Technical Specifications. This surveillance testing is performed monthly in accordance with test procedures TS-81, 82, 83, and 84 to demonstrate EDG operability. The licensee also stated that operations personnel are specifically trained for the testing of the standby EDGs and that surveillance testing records pressure, level, and temperature which provides the supporting data for the verification of component integrity. Further, essentially the same relief was authorized by the NRC for use at PBNP during the third 10-year inspection interval by NRC letter dated May 31, 2000. Detailed information concerning specific tests performed on the starting air auxiliary subsystem, fuel oil transfer subsystem, and glycol cooling subsystem was provided by the licensee in its basis for requesting relief stated above.

During its review of Relief Request No. 11, the NRC staff could not determine the effectiveness of the proposed operational testing of EDGs subsystems to detect leaks. The NRC staff therefore, conducted a telephone conference with the licensee in order to determine the operational experience with the EDG's subsystems and thus assess the effectiveness to detect leaks. The licensee provided a written response on March 10, 2003. The licensee responded that the review of the PBNP corrective action program identified 17 instances of leakage associated with the EDGs that had been identified between 1995 and 2002. The licensee also noted that both operations and engineering personnel had written Action Requests, showing that both groups were involved in assessing the condition of the diesel systems. The EDGs are tested every month by operations personnel, who are often assisted by the plant system engineers. The EDGs are run to test their ability to start when required and to look for any problems that may have occurred while standing idle. During the testing, the EDG systems are examined for leakage. The diesels are walked down three times each day by operations personnel. During the walkdown, operations personnel look at the appropriate water level, sump tank fuel level, starting air bank pressure, fuel oil day tank level, service water pressure, glycol expansion tank levels, and storage tanks. The operations personnel also take a general look at the diesels. If the readings are not within specifications, the Duty Shift Supervisor is informed and appropriate action is initiated. Also, the diesels are thoroughly examined as part of Routine Maintenance Procedures. Any significant discrepancies require the initiation of an Action Request and, if appropriate, a Work Order to correct the identified discrepancies. Further, the PBNP ISI Program requires periodic pressure testing of the service water (SW) piping. The SW piping goes through and around the diesels G-01 and G-02, and is part of their cooling system. During conduct of the periodic SW pressure testing, the VT-2 examiners are required to go around and look above and below the diesels for leakage. The examiners are trained to report any evidence of a discrepant condition, and while not specifically looking at the diesel systems, would likely notice any evidence of obvious leakage. The licensee concluded that the proposed alternative provides an acceptable level of quality and safety.

The licensee proposed to use existing surveillance tests that are required by the current plant Technical Specifications as an alternative to the Code-required pressure testing. The required surveillance testing is routinely performed on various portions of the subject system and is intended to demonstrate component operability. As such, the tests provide an indirect

verification of the leakage integrity of the pressure boundary, in lieu of a direct visual examination performed under normal operating pressure.

The subject subsystems receive these tests every 30 days, which is a much more frequent testing schedule than the system pressure testing required by the Code (approximately every 40 and 120 months). During each surveillance test, pressure drop, fluid level, flow rates and/or temperature data is monitored. Each of these indicators has associated allowable values which, if exceeded, would alert an operator of potential problems, including pressure boundary leakage. The NRC staff expects that system leakage would be identified by the parameters monitored before a significant reduction in structural integrity of the components could occur. If evidence of leakage is identified as a result of surveillance testing, corrective actions or repairs would be implemented and a follow-up confirmatory test performed.

The NRC staff finds that the proposed surveillance testing, although not a direct examination and less sensitive to small leakage than the Code-required pressure testing, is performed at more frequent intervals and the parameters monitored should ensure that the leakage integrity of the pressure boundary is maintained. Therefore, the NRC staff concludes that the proposed alternative provides an acceptable level of quality and safety for components in the EDG subsystems.

The NRC staff finds that the alternative testing requirements described above are acceptable because the surveillance testing would detect any leakage in the system which is the main objective of the Code-required VT-2 examinations. The NRC staff also finds that the surveillance testing performed in accordance with the requirements of the plant Technical Specifications provides an acceptable level of quality and safety as that of the ASME Code, Section XI, 1998 edition with addenda through 2000.

4.0 CONCLUSION

The NRC staff has determined that the proposed alternative testing required by the plant Technical Specifications provides an acceptable level of quality and safety as that of the ASME Code, Section XI, 1998 edition with addenda through 2000. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) at PBNP, Units 1 and 2, during the fourth 10-year inspection interval.

Principle Contributor: G. Georgiev

Dated: March 21, 2003